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# Preparation and characterization of Artemisia Capillaris Thunb Extracts Embedded Electrospun PVA Nanofiber

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Preparation and characterization of *Artemisia Capillaris Thunb* Extracts Embedded Electrospun  
PVA Nanofiber

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Keywords: *Artemisia Capillaris Thunb* Extracts, Nanofiber

Nanofibers which are manufactured by electrospinning have a large specific surface area, and therefore, the content surface of the wounded area becomes wider which fastens the speed of pain relief and wound healing. The absorption ability of body fluids that come from wounds is outstanding due to the many air holes and micro voids on the nanoweb which is composed of nanofiber and because the oxygen permeability is good, it is applicable to wound dressings and so forth.

Also, through the convergence of natural colors (that are eco-friendly and have various functions) and advanced nanotechnology, the development of many human body-friendly well-being new materials is the trend. *Artemisia capillaris Thunb* has an outstanding effect of anti-inflammation and alleviation of fever and it is known to have pharmacological effects such as improvement of skin problems and antioxidation effects. The polyphenol from plants which is contained in the *Artemisia capillaris Thunb* extracts has physiological activity functions such as antioxidation, anti-inflammatory action, anti-bacterial effects and so on.

Thus, this study seeks to use the *Artemisia capillaris Thunb* extracts, which has anti-inflammatory and antioxidation effects, to manufacture a nanoweb and seeks to contemplate the form and change of characteristics of the nanofiber according to the content of *Artemisia capillaris Thunb* extracts.

As for the nanofiber spinning solution, distilled water was used to manufacture a spinning solution of PVA (degree of hydrolysis=88%, degree of polymerization (DP)=1700, Kuraray Co. Ltd.) 12wt%, and in order to look into the influence of the formation of nanofiber according to the *Artemisia capillaris Thunb* extracts, a spinning solution was manufactured by using various concentrations of the *Artemisia capillaris Thunb* extracts which ranged from 0.25 to 1.5wt%. In order to measure the spinning solution's viscosity, the Viscometer (Brookfield DV-II) was used. The characteristics of the PVA nanoweb, which contains a manufactured *Artemisia capillaris Thunb* extracts, were analyzed by using SEM(JSM-700-F), FT-IR Spectrophotometer(ALPHA-P, Bruker, Germany.), and High Resolution X-ray Diffractometer(Bruker AXS, Germany).

According to the results of the study, an even nanofiber of around 260nm can be manufactured when PVA is spun alone. In the case of adding the *Artemisia capillaris Thunb* extracts, the

diameter of the nanofiber was at 340~390nm and hence, increased. In addition, in order to find out how the addition of *Artemisia capillaris Thunb* extracts influences the PVA nanofiber manufacturing, the characteristics of the PVA solution according to the change of the concentration of the *Artemisia capillaris Thunb* extracts was examined and with the addition of 0.25~1.5wt% of the *Artemisia capillaris Thunb* extracts, the viscosity of the solution increased from 14.62 to 18.44P, which shows that as the added concentration of the *Artemisia capillaris Thunb* extracts increases, the viscosity of the nanofiber increases.

In order to examine the PVA's structural potential for change according to the addition of the *Artemisia capillaris Thunb* extracts, the comparison of the manufactured nanoweb's FT-IR spectrum showed the absorption band of the nano-textile that the PVA spun by itself resulted from the hydroxyl group stretching vibration at 3342 cm<sup>-1</sup> peaks and the peaks of 1733 cm<sup>-1</sup> resulted from the ester group's C=O stretching. In the nanofiber that contains the *Artemisia capillaris Thunb* extracts, the peaks resulted from the stretching vibration of the hydroxyl group which moved to 2974 cm<sup>-1</sup> and by the addition of the *Artemisia capillaris Thunb* extracts, the results of the peaks are due to the hydrogen bond of the *Artemisia capillaris Thunb* extract's hydroxyl group and PVA's ester group.

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